



Parking Sensor System User's Manual

Thanks for choosing the RTI ParkSafe system to protect your vehicle. Using advanced ultrasonic technology, the ParkSafe monitors and alerts drivers to obstructions around the vehicle, both visually and audibly. Please read these instructions carefully, to ensure that your system is installed and operated properly.

Features

- **4 Sensor Backup Parking System**
- **In-Bumper type sensors for factory-installed appearance**
- **System activated when vehicle is in reverse**
- **LCD Display with audible alert**
- **Distance display, both symbolically and numerically**

The **ParkSafe System** detects obstacles around vehicles and their distances by emitting high-frequency (ultrasonic) signals and measuring the time needed for those signals to return. Those return times are used to calculate the distance to the obstruction, then display the distances and emit alerts as necessary.

The ParkSafe includes four sensors that can be embedded into the rear bumper, to provide a factory-installed appearance.

Included Components

Component	Function	Location
LCD Display	Graphically displays sensor status, distance, and sounds audible alarms.	Inside driver's compartment.
Control Unit	Main computer and control	Any convenient, protected area.
Ultrasonic Sensor (2 to 4)	Detects obstacles around vehicle	Set into front & rear bumpers.

Technical Data

Rated Voltage	12VDC (24VDC Available Optionally)
Power Requirements	3.6 Watts
Working Temperature	-4° F to 158° F (-20° C to 70° C)
Sensor Detection Range	0.3 to 2.0 Meters
Sensor Detection Angle	Horizontal >60° / Vertical >60°

Sensing Characteristics

Stage	Condition	Audible Alarm	Display
1	Safe Mode	None	2.0-1.6 M
2	Safe Mode	Beep----Beep----Beep	1.5-1.0 M
3	Alarm Mode	Beep--Beep--Beep	0.9-0.5 M / Blue Marker
4	Critical Mode	Beep-Beep-Beep	0.4-.03 M / Yellow Marker
5	Danger Mode	Continuous	0.0 STOP / Red Marker

Typical Installation

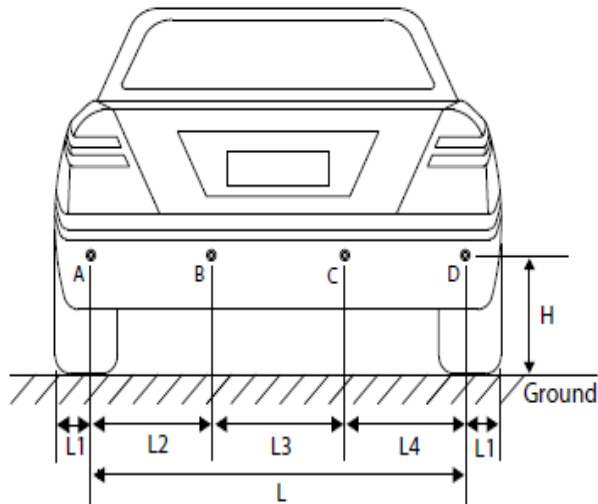


Fig.1 Mounting Height and Position of Sensors
 $H = 50 \sim 80\text{cm}$ ($20'' \sim 32''$)
 $L1 = 6 \sim 15\text{cm}$ ($2'' \sim 6''$)
 $L2 = L3 = L4$ or $L2 = L4 = 0.3L$, $L3 = 0.4L$

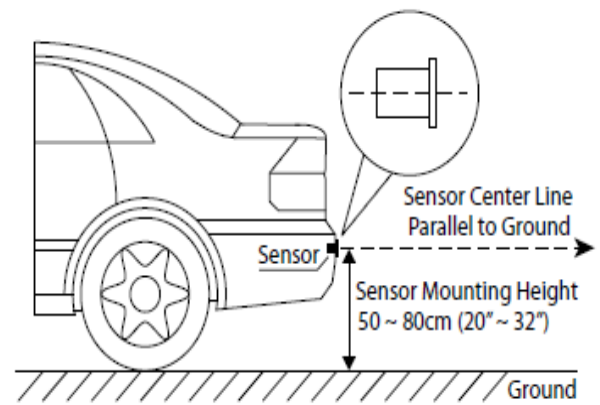


Fig.2 Mounting Height and Angle of Sensor

See Next Page for Detailed Instructions

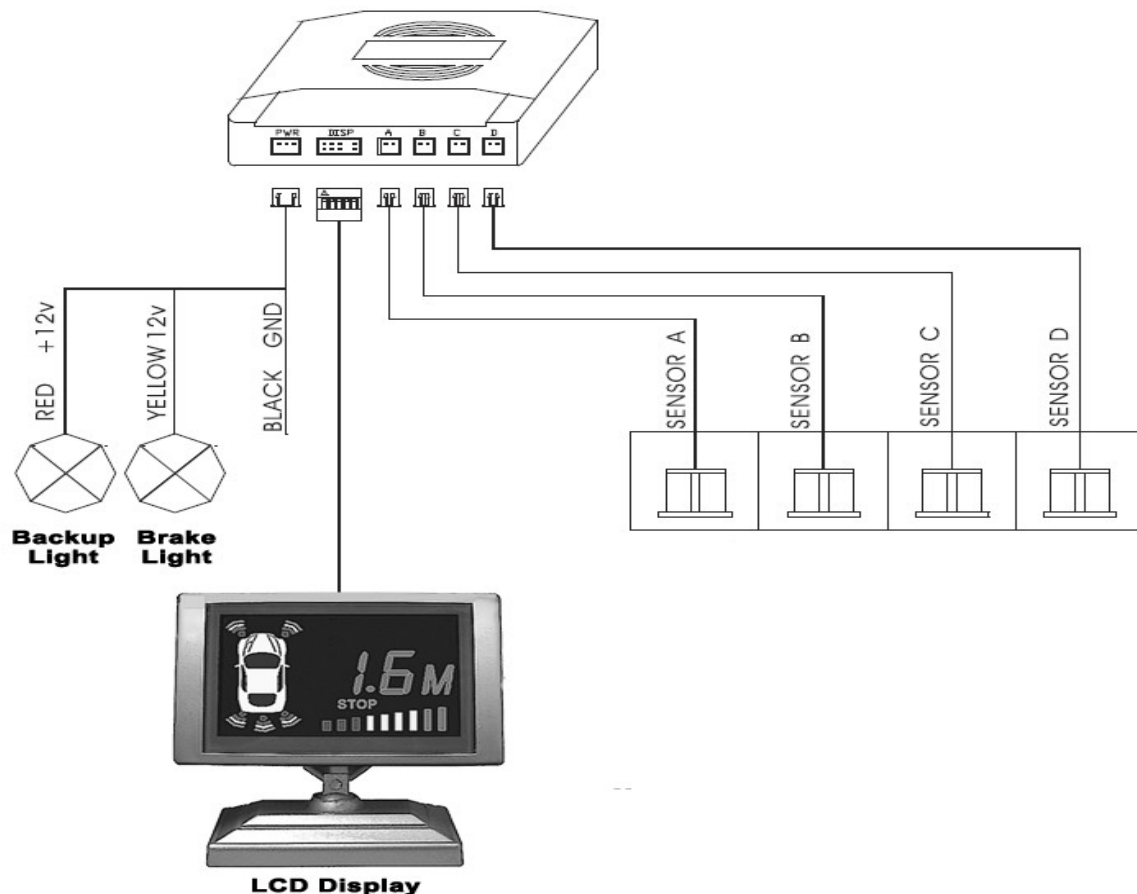
Mounting the Sensors

Drill four 13/16" holes into the bumper, spaced as shown in the above diagram. To avoid false alerts from sensing the ground, the sensors should be mounted between 20" to 32" inches above the ground and the faces of the sensors should be vertical or slightly angled upward.

Note: The mounting area of the bumper should be as flat and vertical as possible.

- 1) Refer to figures for mounting height and positioning of sensors.
- 2) Check the bumper underside for structural obstructions before drilling.
- 3) Mark the positions for the clearance holes on the bumper, and ensure that the positions will have sufficient clearance for the sensors to be fully pushed into the bumper.
- 4) Drill the holes with a 13/16" drill bit.
- 5) Dress the holes with a small file or other smoothing tool to eliminate burrs.
- 6) If the bumper is non-vertical, you may need to shim or use separate bracketing to ensure that the sensor faces are vertical.
- 7) Carefully press each sensor into the drilled holes, while carefully guiding the cables behind them. Press the sensors fully into the holes. Note: Apply force to the edges of the sensors, rather than to the center, to avoid over-stressing the sensor elements.
- 8) Guide the sensor cables along structural elements of the vehicle, and use grommets or strain reliefs when passing the cables through sharp metal edges, to avoid damage.
- 9) Plug the sensors into the control box, and test one at a time by starting the engine, reversing the vehicle and noting the LCD display. The unit should display the correct obstacle distance. Repeat for the remaining sensors.

Wiring the Control Box



Troubleshooting the Installation

If you receive a false alert or continuous beeping problem after installation, unplug all sensors from the control box, and plug in each sensor one at a time. This will help to determine which sensor is causing the problem.

Once you have located the faulting sensor, check to see if the mounting hole is too snug—particularly in a metal bumper. It is possible that the drill hole is too tight, and is exerting pressure on the sensor. In that case, enlarge the hole slightly by dressing it with a small round file.

Testing the System

Back the vehicle very slowly (no more than 3 MPH) to about 8.2 feet from a flat vertical surface such as a wall. Continue to back up slowly, and check the performance against the **Sensing Characteristics** chart on the previous page. For safety, have someone monitor the rear of the vehicle while you are performing the test.

Symptom	Cause	Solution
Display doesn't light when reversing.	No power to display. No power to control box. Faulty display or control box.	Check display power connection. Check control box power. Replace faulty item.
Display lights, but system does not detect any obstacle.	Sensors not connected. Faulty display or control box.	Check sensor connection. Replace display or control box.
System displays distance, but no beeping / distance display.	Beeper is turned off. Faulty display or control box.	Place beeper switch in ON position. Replace display or control box.
Incorrect color alert displays.	Sensors are plugged into wrong connectors at control box.	Install the sensors as shown in the wiring diagram.
Displays 0.0 or beeps continuously.	Object within 0.3m is detected. Sensor holes are too tight.	Identify the offending sensor by unplugging all, then plugging in one at a time. Adjust hole or position for sensor.
Display show distance and beeps even if there is no obstruction.	Sensor is detecting ground / pavement. Sensor is installed too low, or angled toward ground. Sensor holes are too tight, and constricting sensor elements.	Identify the offending sensor by unplugging all, then plugging in one at a time. Adjust hole or position for sensor. Refer to installation instructions.